**CincySTEM Urban ITEST Overview**

***CincySTEM Urban Initiative.***

The ITEST strategies initiative will be incorporated into courses and provide students with opportunities to acquire and process knowledge about STEM careers by learning about, and applying information and communication technologies through web-based projects and experiential learning during site visits and interactions with STEM professionals at partnering organizations. Students will engage in Project-Based Learning where they will learn about and apply information and communication technologies such as flash animation, 3-D modeling, and time lapse photography in the design of activities and education modules.

***Overriding Goals and Objectives***

* An overview of STEM career options through the program majors
* Structured experiential-learning site visits and interactions with partner organizations *(mentoring, early co-op education, job shadowing and other forms of experiential learning involving direct student interaction with regional STEM researchers and professionals)*
* Opportunities for teachers and partners to co-develop content and projects, full-day internships at partner sites, and opportunities to learn about and apply information and communication technologies through web-based project learning

***Intellectual merit.*** The CincySTEM Urban Initiative will be a highly creative ITEST NSF strategies project advancing knowledge in the field of STEM secondary education especially in areas of project-based learning promoting and preparing high school students for STEM careers; experiential learning involving multi-institutional partnerships; and evaluation models for the continuous improvement of innovative STEM initiatives. CincySTEM will offer web-based project learning aimed at motivating students many of whom will be from low-income racial and ethnic minority families to pursue STEM careers. Students will utilize technologies to gather and present information in ways that address multiple learning styles, promote inquiry, and facilitate group work. CincySTEM will also provide experiential learning activities in collaboration with partnering organizations. Students will be exposed to real world applications of STEM design principles and cultivate communication skills through interactions with STEM professionals. An evaluation model will be developed for student assessment and program evaluation that can be used for initiative improvements and building sustainable partnerships. Authentic forms of assessment will also be adopted such as electronic portfolios and capstone projects that track individual student progress and simulated peer review of STEM school projects and outcomes, thereby ensuring all students achieve.

A major CincySTEM web project will be the students’ development of a web map of regional STEM partners with information about them and the STEM careers the offer. Student site visits to partner organizations will be arranged with STEM professionals who will work with students on the web map. The web-map will utilize flash animation, 3-D modeling, audio, video drafting, time lapse photography, avatar and other technologies in the design of

* Virtual tours of each partner organization
* Interactive activities such as web gaming and simulations focused on product engineering, scientific experimentation, mathematic applications and other STEM Pursuits
* Education modules utilizing story boarding, flow charting and other planning strategies incorporating design principles

***Broader Impact.***

CincySTEM till advance our understanding of innovative web-based project learning and experiential learning involving multi-institutional partnerships. Cincy STEM will have its own public website with an area to communicate with site visitors. It will provide resources and activities that can be used by other teachers and students across the nation. CincySTEM will have a broad impact throughout the region, the Ohio STEM Learning Network, and the country through written evaluation reports, publications, and conference presentations.

***Dissemination plan***

OSLN is the central location for the facilitation of research and development of the schools STEM programs and will be the main vehicle for dissemination of innovative projects throughout the state. CincySTEM will also be showcased in the PPDL. The program evaluation findings will be used as the basis for publications and presentations that will be developed through collaborations with CPS and UC.

***Yearly Expectations***

* Year 1
  + Year 1 Planning: A STEM survey course teacher in collaboration with CincySTEM design team will develop curriculum, instructional strategies, and materials for the course. They will also develop the website and web map through experiential learning activities with partnering STEM professionals
  + Primax : Host and maintain website- provide PD for website,
* Year 2:
  + Year 1 Pilot: A pilot program will be launched in year 2 (2010-11) with the website and web-based projects including the development and installations of the web map. There will be a continuation of the student visits to and interactions with STEM partners. Student assessment through capstone projects and presentations to stakeholders will be conducted as well as formative and summative program evaluations
  + Primax: transfer website and supporting applications to Hughes server,
* Year 3:
  + Year 3 Implementation: The program will be fully implemented during year 3 (2011-2012). Implementation will be based on pilot year evaluation data. The website and students web map will be featured. An infrastructure with sustainable linkages to partners will be institutionalized and there will be ongoing student and program evaluation results that will be presented at conferences and publications.
  + Primax: technical assistance with computer and networking needs associated with CincySTEM

***Website***

The website will include links to the science projects and web map. The web map will utilize flash animation, 3-D modeling, audio, video, drafting, time lapse photography, avatar, and other technologies in the design of:

* Virtual tours of each partner organization featuring STEM careers
* Interactive activities such as web gaming and simulations focused on product engineering, scientific experimentation, mathematics applications, and other STEM pursuits
* Education modules utilizing story boarding, flow charting, and other planning strategies incorporating design principles.

***Mini-internships with various activities including:***

* Interviews with university scientists, engineers, mathematicians, and other professionals in partnering organizations where students ask specific questions about career paths and relevant skills and knowledge. Students will help with the development of an interview guide that will ensure uniformity across interviews and provide them with more self-confidence during the interview sessions.
* Video conference calls with STEM professionals to assess the projects and provide helpful tips to enhance content science, mathematics, engineering and other knowledge and applications
* STEM professionals will be invited to a Gateway experience at the end of the year to judge the effectiveness of CincySTEM activities.